

be etched within said vacuum vessel, a lower electrode, and means for generating a plasma within said vacuum vessel, wherein the etching gas is made plasmatic and plasma is generated for use in performing etching treatment of the sample,

wherein said vacuum vessel includes an etching chamber having a sidewall and a jacket which is held inside of said side wall of said etching chamber in an exchangeable state, and

a temperature controller which controls a temperature of said jacket for forming a coating film similar in composition to the etching gas used during the etching treatment on an inner surface of said jacket.

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14. A plasma etching apparatus according to claim 13, wherein said temperature controller subjects said jacket to temperature control due to circulation supplement of a heat exchange medium from a heat exchange medium supply means.

15. A plasma etching apparatus according to claim 14, wherein said temperature controller controls the temperature of said jacket at a value within a range of 0°C to 100°C.

16. A plasma etching apparatus according to claim 13, wherein said temperature controller controls the temperature

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of said jacket at a value within a range of 0°C to 100°C.

17. A plasma etching apparatus including a vacuum vessel as evacuated by an evacuation system, gas supply means for supplying an etching gas into the vacuum vessel, an electrostatic chucking device for holding thereon a sample to be etched within said vacuum vessel, and a lower electrode, wherein the etching gas is made plasmatic and plasma is generated for use in performing etching treatment of the sample,

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cont wherein said vacuum vessel includes an etching chamber having a sidewall and a jacket which is held inside of said side wall of said etching chamber in an exchangeable state, and

a temperature controller which controls a temperature of said jacket for forming a coating film similar in composition to the etching gas used during the etching treatment on an inner surface of said jacket.

18. A plasma etching apparatus according to claim 17, wherein said temperature controller subjects said jacket is subjected to temperature control due to circulation supplement of a heat exchange medium from a heat exchange medium supply means.